SONY

BVM-L231
BVM-L170

Professional Master Monitors

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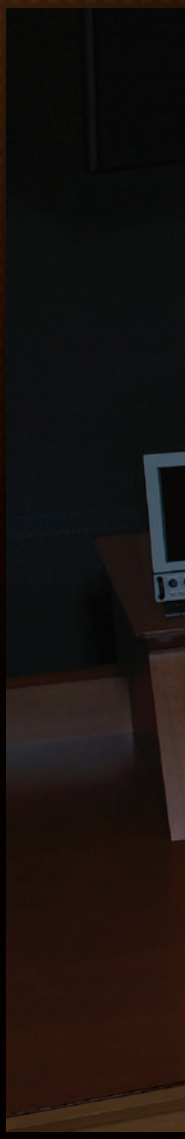
TRIMASTER

BVM-L231 – The Latest Enhancement to Sony's TRIMASTER Master Monitor Series



In 2006, Sony unveiled its first TRIMASTER™ master monitor, the BVM-L230*1 , which offered an innovative master monitor concept based on the latest LCD monitor technology. TRIMASTER technology has established a level of picture performance never before achieved with conventional monitors, and the BVM-L230 master monitor has become widely recognized and well accepted in the production community. Since then, Sony has been continuously enhancing the picture quality of its TRIMASTER master monitors by carefully listening to feedback from customers. Sony's new 23-inch*1 TRIMASTER master monitor, the BVM-L231, is the successor to the BVM-L230. The new BVM-L231, along with the BVM-L170*2 , features advanced Black Frame Insertion technology - plus versatile HDMA and DVI-D inputs, and conventional analog and digital signal interfaces including a new 3G-SDI*3 interface.

The stunning quality of the TRIMASTER master monitors is made possible by three newly developed Sony technologies – a high-grade, 10-bit full resolution LCD panel, an exclusive precision LED backlight system, and a 12-bit professional display engine – all of which have been optimized for producing images at master monitor quality on a flat-panel platform. By combining such devices with sophisticated color management algorithms and advanced feedback systems, the TRIMASTER master monitors achieve highly precise color reproduction, image consistency, and image uniformity to the same degree – or higher – as their CRT predecessors.

For monitor setup and control, the TRIMASTER master monitors retain the same operational convenience as the BVM CRT Series, including its remote-control panel design and features such as Auto White Balance, Blue Only Display, Monochrome Display, RGB Cut Off, H/V Delay, Chroma Up, and Safety Markers.

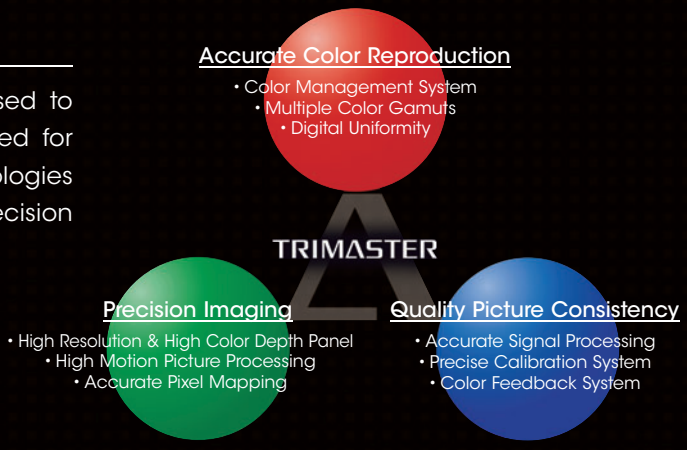
The TRIMASTER master monitors also take maximum advantage of new signal-processing technologies, which enable unprecedented performance for today's new master monitoring needs. Such features include a newly developed Aspect Correction Mode as well as an exclusively developed color gamut emulation function, unique Picture & Picture display functions, a Pixel Zoom function, HD Frame Capture, an Interlace Display Mode, a Gamut Error display, and a wide variety of PC and video input capabilities from VGA to WUXGA*4 and from composite to 2K XYZ 4:4:4 via the Dual-Link HD-SDI and 3G-SDI interfaces.

Both the original BVM-L231 and the new BVM-L170 master monitors incorporate a robust protection panel*5 . Thanks to its panel size, the BVM-L170 can be both AC and DC battery operated and can be mounted in a 19-inch EIA rack. Where top-quality monitoring is a necessity, the BVM-L231 and BVM-L170 master monitors are the ideal solution for high-end acquisition, production, post-production, and broadcast monitoring, right through to Telecine applications.

*1 22.5-inches viewable area measured diagonally.
*2 16.52-inches viewable area measured diagonally.
*3 3G-SDI interface is supported by the optional BKM-250TG interface board. The BVM-L170 (V1.01) and the optional BKM-16R control unit will require a software upgrade when the BKM-250TG option card is installed.
*4 The BVM-L231 only.
*5 The BVM-L170 incorporates the protection panel as standard. The protection panel for the BVM-L231 is offered as an optional item, the BKM-23M.

TRIMASTER Technology

TRIMASTER technology is a design architecture used to bring out the full performance capabilities required for evaluation displays. It comprises the core technologies that enable the highest level of color accuracy, precision imaging, and picture-quality consistency.



Main Features

The BVM-L231 and BVM-L170 master monitors incorporate three unique technologies: a high-grade full resolution LCD panel, a precision LED backlight system, and a unique professional display engine not found in any other monitor. These have been customized for exclusive use in the TRIMASTER master monitor series and provide the high reliability, accurate color reproduction, precision imaging, and picture-quality consistency required by today's most demanding master monitoring applications. Using these technologies, the TRIMASTER master monitors not only achieve the quality of their predecessor BVM-A and BVM-D Series CRT monitors, but also add innovative features for today's new master monitoring needs.

Superb Picture Quality and Stable Color Temperature

Accurate Color Reproduction

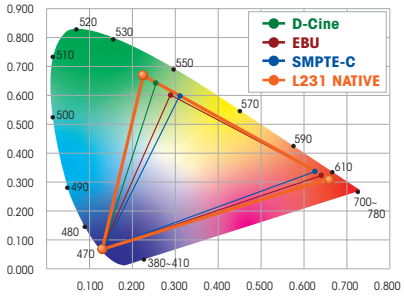
• Nonlinear Cubic Conversion Color Management System

The nonlinear cubic conversion color management system of the BVM-L231 and BVM-L170 master monitors uses a unique 3-D LUT (look-up table) to reproduce precise wide color gamuts meeting SMPTE and ITU standards, thus offering more accurate color reproduction. It offers highly accurate tracking throughout the entire grayscale. The combination of their high-purity LED backlight system, together with this color management system, allows the TRIMASTER master monitors*1 to accurately reproduce color gamuts that replicate broadcast standards such as ITU-R BT.709, and EBU and SMPTE-C phosphor standards.

In addition, the TRIMASTER master monitors offer a unique "D-Cine*2" gamut that reproduces the wider color space used for digital intermediate work. Compared to past CRT monitors, which offer only one color gamut per model, the BVM-L231 and BVM-L170 allow these color gamuts to be selected and reproduced on the same monitor – a feature only made possible by their unique technologies.

*1 In this brochure, "TRIMASTER master monitors" refers to both the BVM-L231 and BVM-L170 master monitors.

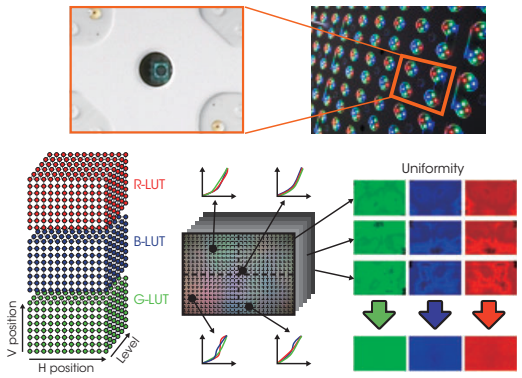
*2 "D-Cine" is a color gamut emulating the color gamut described in SMPTE RP 431-2-2007. The chromaticity of the green-red region is not covered in full, however, the color shift is subtle in this region.



Ultra-high Precision Uniformity Correction

LCD monitors have a reputation for poor uniformity. The new BVM-L231 and BVM-L170 master monitors display superb brightness uniformity performance at every point of the screen, which is achieved by aligning the LED backlight located beneath the LCD panel. This is improved by two new and advanced technologies: precise adjustment of the LCD panel characteristics and a sophisticated LED backlight control system.

At the factory, grayscale levels are precisely measured in several key regions of the panel. Any differences detected in these regions are corrected using an RGB LUT (look-up table) adjustment system. This sophisticated LED backlight system then maintains the alignment using multiple optical RGB sensors aligned together with the R, G, and B LEDs of the backlight. These sensors continually monitor and control both the luminance level of the backlight and the color balance between the RGB LEDs. If color drift is detected, both the color feedback system and the light intensity system balance the corresponding LEDs – red, green, or blue in that specific region to maintain accurate luminance uniformity. The combination of these two technologies allows the BVM-L231 and BVM-L170 master monitors to provide the level of uniformity performance required for critical imaging.



Precision Imaging

• Full HD Panel with 10-bit Driver

The BVM-L231 and BVM-L170 both achieve a high resolution and stunning color depth using a full 1920 x 1080* HD LCD panel and precise 10-bit driver.

* The BVM-L231 incorporates a 1920 x 1200 pixel resolution panel.

• Exclusively Developed I/P Conversion Technology

The BVM-L231 and BVM-L170 use a sophisticated I/P conversion technique that keeps the artifacts often seen in typical LCD monitors to a minimum, such as edge jaggedness, conversion errors, and picture delays of less than one field.

Picture-quality Consistency

• High-accuracy Display Engine

The BVM-L231 and BVM-L170 use a 12-bit display engine, which allows images to be reproduced with high precision for accurate evaluation and manipulation.

• Panel Calibration

Each and every BVM-L231 and BVM-L170 monitor is carefully calibrated at the factory on an individual basis, providing a high level of accuracy and stability for characteristics such as gamma and uniformity.

• Color Feedback System

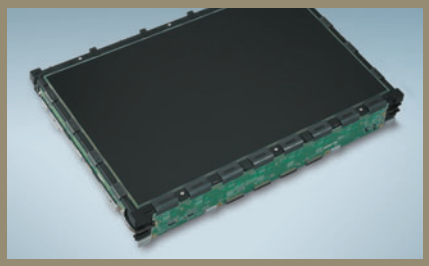
Using a color feedback system, the BVM-L231 and BVM-L170 achieve the stability that's required for master monitor applications.

Three Key Devices Enabling Master Monitor Picture Quality

■ Customized LCD Panel – 23-inch* and 17-inch* Full HD Resolution

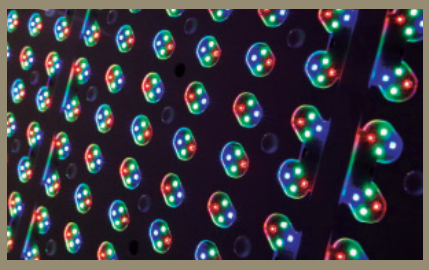
The LCD panels have been developed exclusively for use on the BVM-L231 and BVM-L170, respectively, based on strict master monitor criteria. They offer a 10-bit driver and advanced LCD technology that can display high frame rates with a very high-speed response.

* 22.5-inch and 16.52-inch viewable area measured diagonally, respectively.



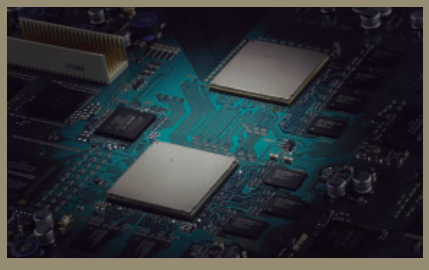
■ Precision Backlight System

Using Sony-designed high-purity LEDs, the precision backlight system is another development used exclusively in the BVM-L231 and BVM-L170 master monitors. This enables the widest color gamut ever offered in a Sony monitor and fully covers broadcast-standard color spaces. The precision backlight system also incorporates a uniformity control and a color feedback system.



■ Professional Display Engine

The high-precision signal-processing engine has been developed to fulfill master monitor criteria and is optimized for use on the BVM-L231 and BVM-L170 master monitors. This engine incorporates 12-bit output accuracy at each process, and provides a high-quality I/P conversion algorithm and a highly accurate color management system.



Multi-format Signal Support

Input Versatility

Both the BVM-L231 and BVM-L170 master monitors can accept almost any SD or HD video format, both analog and digital, plus PC signals from VGA to WUXGA (1920 x 1200)*. In addition to a DVI-D and an HDMI™ interface equipped as standard, four option board slots are offered to configure these master monitors according to different user needs. The optional analog interfaces accept composite, Y/C, Y/PB/PR, and RGB.
Digital interfaces accept SD-SDI, HD-SDI, Dual-Link HD-SDI, and 3G-SDI inputs. Acceptable signal formats include: 525/60i, 625/50i, 525/60P, 625/50P, 720/50P and 720/60P, 10-bit/12-bit RGB 4:4:4 1080/24PsF, 1080/24P, 1080/25PsF, 1080/25P, 1080/50i, 1080/30PsF, 1080/30P and 1080/60i, 10-bit 4:2:2 1080/50P and 1080/60P, and the digital cinema formats of 12-bit 4:4:4 RGB/XYZ 2048 x 1080/24PsF and 2048x1080/24P.

* The BVM-L170 monitor can accept PC signals up to full HD (1920 x 1080).

BVM-L231 with the optional BKM-250TG 3G-SDI board

● 3G-SDI Interface

Both the BVM-L231 and BVM-L170 can be equipped with an optional 3G-SDI interface. The BKM-250TG 3G-SDI interface board is compliant with the SMPTE 425 standard and requires only one single SDI cable to transmit up to 10-bit 4:2:2 1080P/60P video signals. This optional 3G-SDI interface offers a simple cabling solution for groups of video equipment rack-mounted behind an editing room.

BVM-L231/BVM-L170 Acceptable Signal Formats

NO	System Nomenclature	Samples per active line	Active lines per frame	Frame Rate fV (Hz)	Interface sampling freq (MHz)	Samples per active line	Total lines per frame	Line Frequency fH (kHz)	Standard
1	525/59.94i	720	487	59.94	13.5	858	525	15.73	Rec.ITU-R BT.601
2	625/50i	720	576	50	13.5	864	625	15.63	Rec.ITU-R BT.601
3	525/59.94P	720	483	59.94	27	858	525	31.47	SMPTE 293M/Rec.ITU-R BT.1358
4	625/50P	720	576	50	27	864	625	31.25	Rec.ITU-R BT.1358
5	1920 x 1080/24PsF*	1920	1080	48/47.95	74.25 74.25/1.001	2750 2750	1125	27.00	SMPTE RP 211
6	1920 x 1080/24P*	1920	1080	24/23.97	74.25 74.25/1.001	2750	1125	27.00	SMPTE 274M
7	1920 x 1080/25PsF	1920	1080	50			1125	28.13	RP 211
8	1920 x 1080/25P	1920	1080	25	74.25	2640	1125	28.13	SMPTE 274M
9	1920 x 1080/50i	1920	1080	50	74.25	2640	1125	28.13	SMPTE 274M
10	1920 x 1080/30PsF*	1920	1080	60/59.94			1125	33.75	RP 211
11	1920 x 1080/30P*	1920	1080	30/29.97	74.25 74.25/1.001	2200	1125	33.75	SMPTE 274M
12	1920 x 1080/60i*	1920	1080	6/59.94	74.25 74.250/1.001	2200 2200	1125	33.75	SMPTE 274M
13	1280 x 720/24P*	1280	720	24/23.97	74.25 74.25/1.001	4125	750	18.00	SMPTE 296M
14	1280 x 720/25P	1280	720	25	74.25	3960	750	18.75	SMPTE 296M
15	1280 x 720/30P*	1280	720	30/29.97	74.25 74.25/1.001	3300	750	22.50	SMPTE 296M
16	1280 x 720/50P	1280	720	50	74.25	1980	750	37.50	SMPTE 296M
17	1280 x 720/60P*	1280	720	60/59.94	74.25 74.250/1.001	1650 1650	750	45.00	SMPTE 296M
18	1920 x 1080/50P	1920	1080	50	148.5	2640	1125	56.25	SMPTE 274M
19	1920 x 1080/60P*	1920	1080	60/59.94	148.5 148.5/1.001	2200	1125	67.50	SMPTE 274M
20	2048 x 1080/24PsF*	2048	1080	48/47.95	74.25 74.25/1.001	2750	1125	27.00	
21	2048 x 1080/24P*	2048	1080	24/23.97	74.25 74.25/1.001	2750	1125	27.00	

* Also compatible with 1/1.001 frame rates.

Flexible Input Configuration

Like the BVM-A Series CRT monitors, the BVM-L231 and BVM-L170 use a modular slot design so inputs can be configured according to individual needs. Four input board slots are available. Optional input boards* can be installed in any board slot, and in almost any combination, allowing easier configuration and better cost-per-input value. These option boards utilize only one slot each, so up to four cards can be installed for maximum flexibility.

* The BVM-L231/BVM-L170 input boards are not compatible with other earlier BVM-A or BVM-D Series CRT monitors.

Input Board Slots

Interface Chart by Input Boards

Input Signal \ Board	System Nomenclature	Signal Format	BKM-220D	BKM-227W	BKM-229X	BKM-243HS*3	BKM-244CC*3	BKM-250TG*3
Analog Input	525/59.94i	Composite, Y/C (NTSC/PAL/PAL-M/SECAM)		●				
	625/50i			●				
	525/59.94i	Y/PB/PR, GBR		●				
	625/50i			●				
	1080/24Psf*2				●			
	1080/24P*2				●			
	1080/50i (25PsF)				●			
	1080/25P				●			
	625/50P				●			
	525/59.94P				●			
	1080/60i (30PsF)*2				●			
	1080/30P*2				●			
	720/50P				●			
	720/60P*2				●			
SD-SDI	525/59.94i	Y/PB/PR	●			●	●	●
	625/50i		●			●	●	●
HD-SDI	1080/24PsF*2	10bit 4:2:2 Y/PB/PR				●	●	●
	1080/25PsF					●	●	●
	1080/30PsF*2					●	●	●
	1080/50i					●	●	●
	1080/60i*2					●	●	●
	1280 x 720/60P*2					●	●	●
	1280 x 720/50P					●	●	●
Dual-Link HD-SDI	1080/24PsF*2	10bit 4:4:4 Y/PB/PR, GBR 12bit 4:4:4 GBR				●*1	●*1	●*1
	1080/24P*2					●*1	●*1	●*1
	1080/25PsF	10bit 4:4:4 Y/PB/PR, GBR				●*1	●*1	●*1
	1080/25P	12bit 4:4:4 GBR				●*1	●*1	●*1
	1080/30PsF*2	10bit 4:4:4 Y/PB/PR, GBR 12bit 4:4:4 GBR				●*1	●*1	●*1
	1080/30P*2	12bit 4:4:4 GBR				●*1	●*1	●*1
	1080/50i	10bit 4:4:4 Y/PB/PR, GBR 12bit 4:4:4 GBR				●*1	●*1	●*1
	1080/60i*2					●*1	●*1	●*1
	1080/50P	10bit 4:2:2 Y/PB/PR				●*1	●*1	●*1
	1080/60P*2	10bit 4:2:2 Y/PB/PR				●*1	●*1	●*1
	2048 x 1080/24PsF*2	12bit 4:4:4 XYZ 10bit/12bit 4:4:4 RGB				●*1	●*1	●*1
	2048 x 1080/24P*2					●*1	●*1	●*1
3G-SDI	1080/24PsF*2*4	10bit 4:4:4 Y/PB/PR, GBR 12bit 4:4:4 Y/PB/PR, GBR						●
	1080/25PsF*4							●
	1080/30PsF*2*4							●
	1080/24P*2*4							●
	1080/25P*4							●
	1080/30P*2*4							●
	1080/50i*4							●
	1080/60i*4							●
	1080/50P	10bit 4:2:2 Y/PB/PR						●
	1080/60P*2							●
	1280 x 720/24P*2*4	10bit 4:4:4 Y/PB/PR, GBR						●
	1280 x 720/25P*4							●
	1280 x 720/30P*2*4							●
	1280 x 720/50P*4							●
	1280 x 720/60P*2*4							●
	2048 x 1080/24PsF*2*4	10bit 4:4:4 GBR						●
	2048 x 1080/24P*2*4	12bit 4:4:4 GBR, XYZ						●
Number of digital inputs			2	–	–	2	2	2
Number of analog inputs			–	1	1	–	–	–

*1 Two BKM-243HS or BKM-244CC, or one BKM-250TG optional boards are used. *2 Also compatible with 1/1.001 frame rates. *3 BKM-243HS, BKM-244CC and BKM-250TG automatically detect SD-SDI and HD-SDI input signals. *4 Untested

HDMI/DVI-D Input Signal Formats

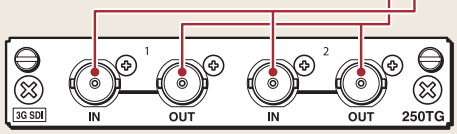
System	Interface sampling freq (MHz)	Aspect Ratio	Standard	HDMI RGB 4:4:4 8/10/12 bit YCbCr 4:4:4 8/10/12 bit YCbCr 4:2:2 12 bit	DVI-D Single Link RGB 4:4:4 8 bit
Viedo Signals					
640 x 480/60P*	25.200*	4:3	CEA-861	○	○
720 x 480/60P*	27.027*	4:3/16:9		○	○
1280 x 720/60P*	74.250*	16:9		○	○
1920 x 1080/60i*	74.250*	16:9	CEA-861	○	○
		2.39:1			
720 (1440) x 480/60i*	27.027*	4:3/16:9	CEA-861	○	○
720 x 576/50P	27.000*	4:3/16:9		○	○
1280 x 720/50P	74.250	16:9		○	○
1920 x 1080/50i	74.250	16:9	CEA-861	○	○
		2.39:1			
720 (1440) x 576/50i	27.000	4:3/16:9	CEA-861	○	○
1920 x 1080/60P*	148.500*	16:9	CEA-861	○	○
		2.39:1			
1920 x 1080/50P	148.500	16:9	CEA-861	○	○
		2.39:1			
1920 x 1080/24P*	74.250*	16:9	CEA-861	○	○
		2.39:1			
1920 x 1080/25P	74.250	16:9	CEA-861	○	○
		2.39:1			
1920 x 1080/30P*	74.250*	16:9	CEA-861	○	○
		2.39:1			
Computer Signals					
800 x 600/60P	40.000	4:3	VESA	○	
1024 x 768/60P	65.000	4:3		○	
1280 x 960/60P	108.000	4:3		○	
1280 x 1024/60P	108.000	5:4		○	
1400 x 1050/60P	121.750	4:3		○	
fH:28-75 kHz, fV:48-85 Hz Max. res.: 1920 x 1080/60P	25.000-162.000				○

* Also compatible with 1/1.001 frame rates.

Signal-interface Options

BKM-250TG, 3G/HD/SD-SDI Input Adaptor*

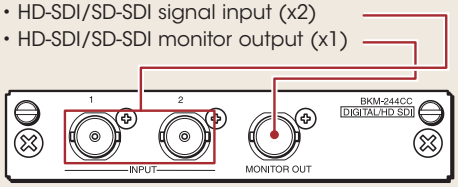
- 3G/HD/SD-SDI signal input (x2)
- 3G/HD/SD-SDI monitor output (x2)



* 3G-SDI, HD-SDI and SD-SDI signals are detected automatically

BKM-244CC, HD/SD-SDI Closed Caption Adaptor*

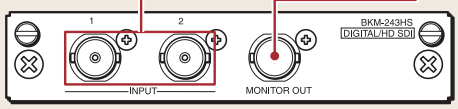
- HD-SDI/SD-SDI signal input (x2)
- HD-SDI/SD-SDI monitor output (x1)



* HD-SDI and SD-SDI signals are detected automatically
* Closed-caption decoders (EIA 608 and EIA 708) are equipped

BKM-243HS, HD-SDI/SD-SDI Input Adaptor*

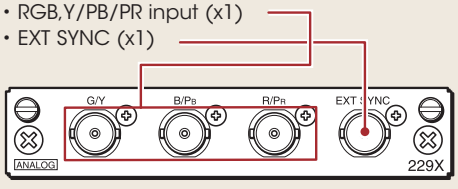
- HD-SDI/SD-SDI signal input (x2)
- HD-SDI/SD-SDI monitor output (x1)



* HD-SDI and SD-SDI signals are detected automatically

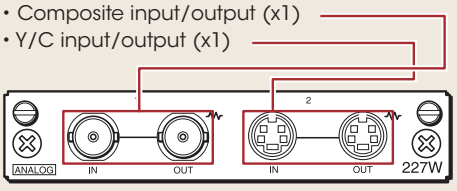
BKM-229X, Analog Component Adaptor

- RGB,Y/PB/PR input (x1)
- EXT SYNC (x1)



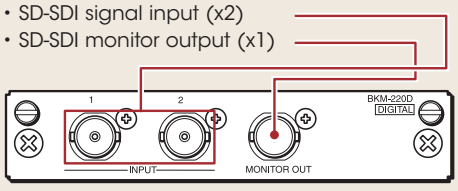
BKM-227W, NTSC/PAL Input Adaptor

- Composite input/output (x1)
- Y/C input/output (x1)



BKM-220D, SD-SDI 4:2:2 Input Adaptor

- SD-SDI signal input (x2)
- SD-SDI monitor output (x1)



Operational Convenience

The BVM-L231 and BVM-L170 master monitors have unique features which are made possible only by Sony's flat-panel technologies. These monitors also benefit from the same acclaimed functions and operational conveniences of their predecessors, BVM-A Series and BVM-D Series CRT master monitors.

In addition, the BVM-L170 incorporates a robust protection panel and a DC battery-operation capability, features which are strongly desired for use in the field.

Variety of Display Modes

Most flat-panel monitors can only display progressive images at the input signal's frame rate. However, the BVM-L231 and BVM-L170 have two additional and unique display modes – Black Frame Insertion Display and Interlace Display:

Black Frame Insertion Display

Combining its high-frame-rate operation*1 with the unique Black Frame Insertion technology, the BVM-L231 and BVM-L170 master monitors dramatically reduce motion blur; a characteristic that is inherent to LCD devices. The BVM-L231 and BVM-L170 employ this Black Frame Insertion using a method called backlight blinking.

Sony's backlight blinking operates by turning the backlight emission on and off within the duration of one frame*2. This newly developed method minimizes black level rise in the dark portion of the image.

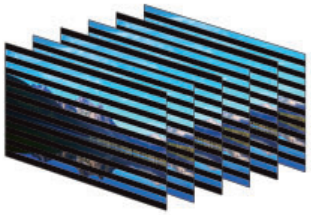
*1 Supports 120-Hz and 100-Hz frame rates.

*2 This is not a dynamic backlight system where the light level varies according to the average picture level.

100/120Hz
Black Frame
Insertion Display

Interlace Display

The Interlace Display mode of the BVM-L231 and BVM-L170 can display interlace input signals as interlace fields. As with the Native Scan function, the Interlace Display mode offers faithful reproduction of the input signal and the displayed interlace fields are free from the picture degradation that can occur as a result of the monitor's I/P conversion process.



100/120Hz
Interlace Display

Native Scan (pixel-to-pixel display)

Conventional flat-panel monitors reproduce images using scaling and I/P conversion due to their fixed pixel counts and progressive scanning processes. The Native Scan function is a unique display mode that reproduces images without changing the input signal's pixel count. For example, when an SD signal is input, the BVM-L231 and BVM-L170 master monitors will reproduce the image at a picture size of 720 x 487* pixels. For SD input in particular, the Native Scan function also allows the image's display size to be doubled to 1440 x 974* by duplicating and doubling each pixel both horizontally and vertically.

* 525/59.94i signal specified by Rec. ITU-R BT.601

1920 x 1080 Native Scan

720 x 487 Native Scan

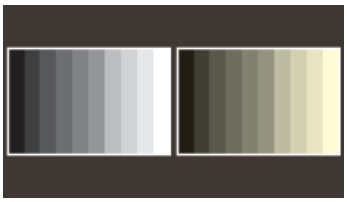
1440 x 974 Native Scan
(720 x 487) x 2

Picture & Picture (Side by Side, Butterfly, Wipe, and Blending)

The unique Picture & Picture function of the BVM-L231 and BVM-L170 allows simultaneous display of two input signals on its LCD screen. This function is extremely convenient for making instant adjustments of two input sources, because there is no need to individually adjust the different characteristics of two monitors. This function comes in handy for adjustments between two cameras, special-effects creation, time-lapse shooting, and computer-generated graphics work. Both the BVM-L231 and BVM-L170 offer four Picture & Picture modes:

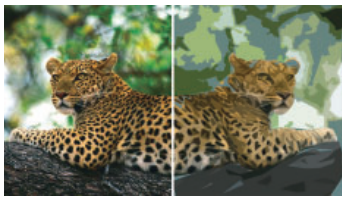
Side by Side

The two picture images are downscaled using a digital filter and displayed side by side. This feature is convenient when making white balance adjustments and/or determining shooting angles between two cameras.



Butterfly

The two inputs are displayed as line-symmetric images on the left and right halves of the screen. By adjusting the H position controller, the two images can be moved inward to the middle of the screen. An instant comparison of the moving images can then be made easily and accurately, without the user having to move their eyes.



WIPE

The area of the two pictures to be displayed is selected using a vertical WIPE pattern, which is controlled from the BKM-16R. This function is useful when picture details of the two images must be examined on a pixel basis. This is normally used when looking at still images.

Blending

The two picture images are overlapped for display. The mix ratio is adjustable. This function is useful when verifying whether a foreground signal is accurately keyed into the background signal, or when combining shoots with live action and computer-generated effects.

Pixel Zoom

Pixel Zoom is a function for magnifying images. A selected area of the displayed picture can be enlarged on a pixel basis, up to eight times both vertically and horizontally. Because the function does not use scaling, the desired picture content is magnified and displayed faithfully to the raw input signal. This function in the BVM-L231 and BVM-L170 is useful when evaluating precise picture edges, such as for chroma keying.

* This function is effective when the input signal is displayed by the "Native Scan" mode.

Error Signal

HD Frame Capture

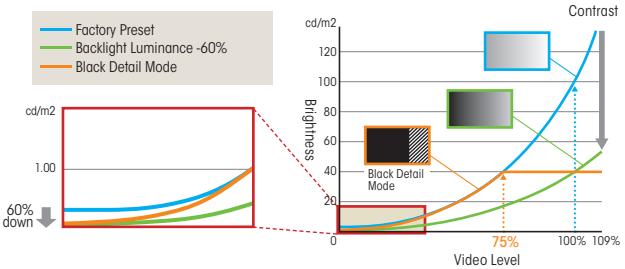
The HD Frame Capture function of the BVM-L231 and BVM-L170 allows a picture frame from the HD-SDI input to be captured and saved as a picture file on Memory Stick media*. This picture file can be used as a reference for various purposes, such as for picture-tone adjustments between past images and for camera-framing adjustments.

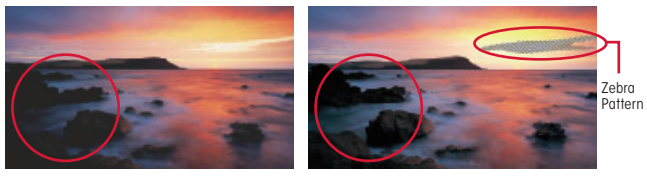
* Both standard-size Memory Stick media and smaller Memory Stick Duo/Memory Stick PRO Duo media can be used. A Memory Stick Duo adaptor is not required.

Black Detail Mode

Due to the mechanism of an LCD panel, backlight leakage from the panel surface is unavoidable. Black Detail Mode is a function that provides more accurate monitoring of black details in dark, low-APL images. Utilizing a sophisticated backlight system and a unique signal-processing algorithm in the BVM-L231 and BVM-L170, the black region of the video level is effectively enhanced*. This function is recommended as an auxiliary function.

* Video levels higher than 75% are clipped for display. This function can indicate the clipped areas with the zebra pattern.

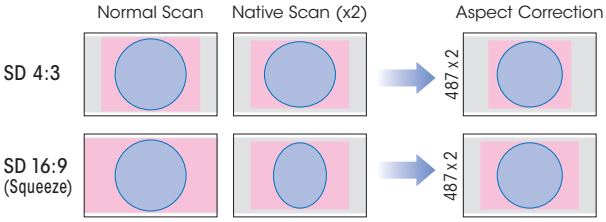




Normal Mode Black Detail Mode

Aspect Correction Mode

A major difference between CRT and LCD monitors is the shape of their respective pixel arrays. CRT monitors use a non-square array, while LCD displays adopt a square-shaped array. Aspect Correction Mode is a technique used by LCD displays including the BVM-L231 and BVM-L170 to overcome this difference and emulate the look of a CRT image. Using a scaling technique, this function arranges the SD input signal to emulate the CRT's non-square pixel array in a horizontal direction. It also applies the appropriate scaling algorithm depending on the video format, NTSC or PAL. An interlace display mode can also be applied when necessary, enabling the monitor to reproduce familiar-looking SD images.



Example of NTSC signal on the 16:10 aspect panel - BVM-L231

Gamut Error Display

The BVM-L231and BVM-L170 master monitors incorporate a Gamut Error Display function that detects irregular signal input. When an irregular signal is detected, the BVM-L231 and BVM-L170 master monitors indicate this with a ZEBRA pattern over the relevant area of the picture. Irregular signal data can include non-standard input signals and video signals exceeding the video level (selectable), which can be generated during the signal conversion from HD component to RGB. Gamut Error Display is a convenient feature that instantly alerts viewers of such signals without using a waveform monitor.

S-LOG GAMMA

The BVM-L231 and BVM-L170 master monitors incorporate gamma tables to reproduce images captured using S-LOG gamma technology. S-LOG gamma is a technique used in Sony's digital cinematography cameras that allows the full latitude of the camera CCD to be maintained throughout the production chain. Unlike conventional systems, in which highlight contrast is compressed, S-LOG gamma logarithmically converts the video signal using characteristics similar to film negatives. This keeps the camera CCD dynamic range intact, even in extreme highlight areas. Both the BVM-L231 and BVM-L170 allow reproduction as an inverse function of the camera's S-LOG gamma signals. Two display modes are offered:

1) S-LOG Full

This mode displays the full dynamic range of the video signal captured from Sony's digital cinematography cameras.

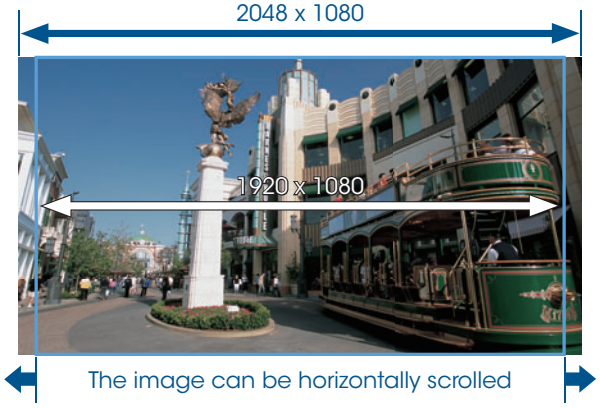
2) S-LOG Standard

This mode displays image exposure levels at the lower part of the S-LOG gamma signal dynamic range, allowing image areas of regular brightness to be viewed clearly. Higher exposure levels are clipped in this mode.

2048 Image Slide

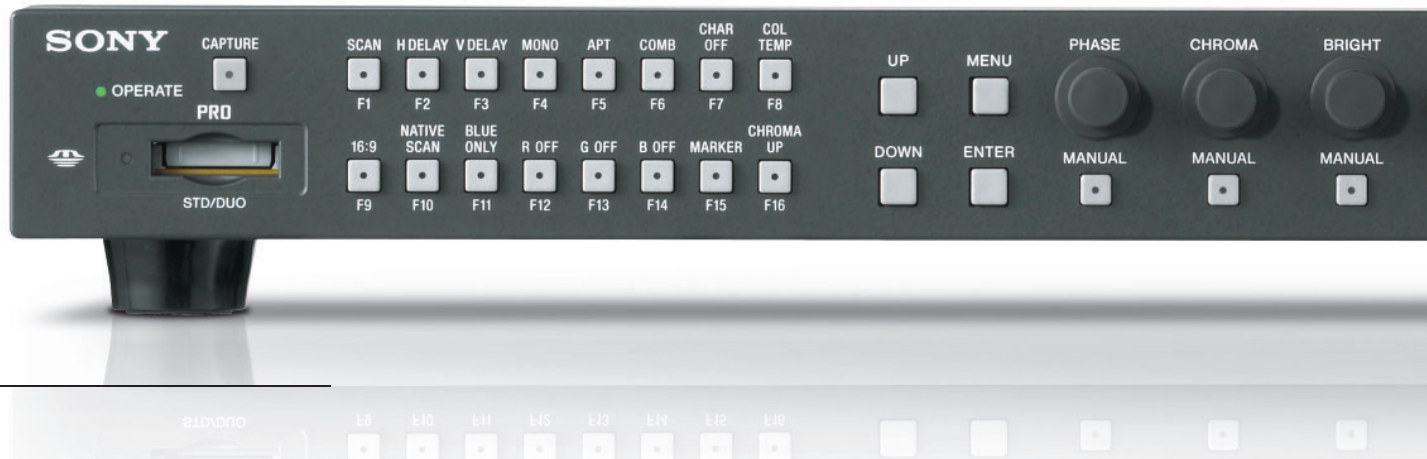
The 2048 Image Slide function of the BVM-L231 and BVM-L170 allows 2K*1 resolution images to be mapped, pixel-to-pixel, on the 1920*2 Full HD panel without picture degradation. When the left or right edge of the picture frame needs to be viewed, users can scroll the image in the horizontal direction.

*1 2048 x 1080 pixels
*2 1920 x 1080 pixels



"+12dB Chroma Up" Function

A "Chroma UP" button located on the front panel of the BKM-16R allows the Chroma Level to be boosted by +12 dB. This is a convenient feature for adjusting camera white balance with a higher degree of accuracy.



Marker Settings

Like the earlier BVM Series CRT monitors, the BVM-L231 and BVM-L170 master monitors can display various markers, including an aspect marker, safe area marker, and center marker. In addition to this flexible selection of marker types, detailed display settings of each marker are offered. For example, the color, brightness, horizontal/vertical position, and width of aspect markers can all be controlled, while the height and width of safe area markers can be adjusted. What's more, users can also choose to display two safe area markers, each selectable between three marker variations. These flexible marker controls, together with the choice of many different marker types such as aspect marker types (lines or aspect blanking) and center marker types (long or short), make the BVM-L231 and BVM-L170 master monitors the perfect all-round display device for a variety of shooting scenarios – from SD/HD video acquisition to digital cinematography.

Marker Variation

	Safe Area Marker		Aspect Marker
	%	Dot (Pixel)	
Selectable Markers	80%, 88%, 90%, 93%, or variable	Flexible	16:9, 15:9, 14:9, 13:9, 4:3, 2.39:1, 2.35:1, 1.896:1. 1.85:1, or 1.66:1
Line Colors	White, Red, Green, Blue, Yellow, Cyan, or Magenta		
Line Width	Thick or Thin		
Line Luminance	90 IRE or 40 IRE		

Scan Switch

The Scan Switch function allows switching between 5% blanking (or 95% area display), and 0% and -3% Under Scan mode.

DC Battery Operation

The BVM-L170 can be either AC or DC battery operated. Due to its lightweight and small-size design, with a comparable height to the former 14-inch BVM-CRT monitors, the BVM-L170 is ideal for field and OB VAN applications.

Marker Examples

Screen Size: 16:9,
Aspect Mode: 2.35:1,
Aspect Marker Color:Magenta,
Marker Bright: 90IRE,
Width: THICK,
Safe Area: Shape A,
Area Size: 80%,
Center Marker: Short,
Aspect Blanking: Off

Screen Size: 16:9,
Aspect Mode: 14:9,
Aspect Marker Color: Yellow,
Marker Bright: 40IRE,
Width: THIN,
Safe Area: Shape B,
Area Size 80%,
Center Marker: Short,
Aspect Blanking: HALF

Screen Size: 16:9,
Aspect Mode: 4:3,
Aspect Marker Color: Green,
Marker Bright: 90IRE,
Width: THICK,
Safe Area: SHAPE C,
Area Size: 80%,
Center Marker: LONG, Aspect Blanking: BLACK

Robust Protection Panel

The BVM-L170 incorporates a robust protection panel as standard. For the BVM-L231, the optional BKM-23M Protection Panel is recommended, which is easy to attach on and off.

The BVM-L231 with
the optional BKM-23M Protection Panel

Modular Monitor Control Unit (BKM-16R)

Like the earlier BVM Series, the monitor and control panel are provided as separate units, allowing greater flexibility for system integration. The BVM-L231 and BVM-L170 incorporate a Monitor Control Unit, the BKM-16R, which can be attached below the monitor using the optional Controller Attachment Stand, the BKM-37H, or connected remotely via an Ethernet cable.

The BVM-170 monitor and the BKM-16R controller attached with the BKM-39H Attachment Stand.

The BVM-L231 monitor and the BKM-16R controller attached with the BKM-37H Attachment Stand.

Ethernet-based Remote Control

Like the BVM-A Series monitors and controller, the BVM-L231/BVM-L170 monitors and the BKM-16R Monitor Control Unit are equipped with an Ethernet port, allowing remote control of display parameters across a standard Ethernet connection.

One BKM-16R Monitor Control Unit can control up to thirty-two (32) BVM* monitors.

* BVM-A CRT monitors and both BVM-L and PVM-L LCD monitors.

Copy Function

The optional BKM-16R control unit has a Memory Stick™ slot*1 to save and load monitor setup and adjustment data. This is useful for multiple monitor systems, allowing the same setup and adjustment data to be loaded onto each unit*2. This data can also be transferred via the BVM's Ethernet connection.

*1 Both standard-size Memory Stick® media and the smaller Memory Stick Duo® Memory Stick PRO Duo® media can be used. A Memory Stick Duo adaptor is not required.

*2 Data can be moved between the BVM-A monitors, BVM-L monitors, and PVM-L monitors, respectively.

BKM-16R Monitor Control Unit

Front Panel

Rear Panel

Easy Setup and Adjustment

Auto White Balance

The color temperature and white balance of the BVM-L231 and BVM-L170 master monitors can be automatically adjusted by the Auto White Balance function using the specified color temperature probes*, such as the Konica Minolta CA-210, DK-Technologies PM5639/06, and X-Rite i1 (Eye-One) Pro.

* A connector is required for each color analyzer.

Auto Chroma/Phase Adjustment*

An Auto Chroma/Phase/Matrix setup function is provided on the BVM-L231 and BVM-L170 master monitors, which automatically adjusts the monitor's chroma, phase, and matrix using external color bars.

* Supports analog signal inputs only.

Internal Test Signal and SMPTE Color Bars

The BVM-L231 and BVM-L170 master monitors incorporate a built-in test signal generator for: 100% white signal, 20% gray signal, 0% black signal, PLUGE (Picture Line Up Generating Equipment) signal, color-bar signals, 5-step grayscale signal, and ramp signal.

"Character Off" Button (BKM-16R)

To facilitate parameter adjustments, the On-Screen Menu indication can be taken off the screen, while the Menu mode is still active. The On-Screen Menu indication can be toggled on or off simply by the press of a button on the BKM-16R's front panel.

Color Temperature Selection

The Color Temperature can be selected from D65, D93, D61, D56, D-Cine*, or User1 to User5. A "Color Temp" (Color Temperature) button located on the BKM-16R's front panel enables instant access to the "Color Temp menu" without using the On-Screen menu.

* D-Cine: x=0.314, y=0.351

Aspect Switch

The aspect ratio can be switched between 4:3, 16:9, 2.39: 1, and 1.896:1 depending on the input signal.

16:9	⇔ 4:3
16:9	⇔2.39:1
1.896:1	⇔2.39:1

Other Features

- VESA™ Mounting (200 x 100 mm pitch)*1
- 19-inch EIA Standard Rack Mountable*2
- Blue Only
- Mono
- H Delay/V Delay
- NTSC Setup Level (0%, 7.5%)
- Component Level (SMPTE/EBU-N10 or Betacam)
- Aperture
- Serial Remote (Ethernet)
- Parallel Remote (D-sub 9-pin)
- Tally Lamp (Amber)
- EXT Sync (for RGB/YUV)
- Remote Maintenance

*1 BVM-L231 only

*2 BVM-L170 only

5° Tilt Forward 10° Tilt Backward

The BVM-L231 with the BKM-37H Attachment Stand

Specifications

		BVM-L231	BVM-L170
PICTURE PERFORMANCE			
Type		a-Si TFT Active Matrix LCD	a-Si TFT Active Matrix LCD
Picture Size (Viewable Area)	(H x V)	Approx. 19 1/8 x 12 inches(Approx. 483.8 x 302.4 mm)	Approx. 14 1/2 x 8 1/8 inches (Approx. 366 x 206 mm)
	(Diagonal)	22 1/2 inches (570.6 mm)	Approx. 16 1/2 inches (419 mm)
Aspect		16:10	16:9
Resolution (H x V)		1920 x 1200 pixels (WUXGA)	1920 x 1080 pixels
Pixel Efficiency		99.99 %	99.99 %
Backlight		High-purity LEDs	High-purity LEDs
Preset Brightness		100 cd/m² (D-Cine: 48 cd/m²) (when 100 % white signal is input)	100 cd/m² (D-Cine: 48 cd/m²) (when 100 % white signal is input)
Panel drive		RGB 10 bit	RGB 10 bit
Panel frame rate		96/100/120 Hz	96/100/120 Hz
Viewing angle		85°/85°/85°/85° (typical) (up/down/left/right contrast > 10:1)	85°/85°/85°/85° (typical) (up/down/left/right contrast > 10:1)
INPUT/OUTPUT			
Video Input/Output		Four (4) slots	Four (4) slots
PC Input		DVI-D (HDCP correspondence) x 1	DVI-D (HDCP correspondence) x 1
HDMI		HDMI x 1 HDCP correspondence, Deep color correspondence	HDMI x 1 HDCP correspondence, Deep color correspondence
Control	LAN	Ethernet (10 BASE-T/100 BASE-TX), RJ-45 x 1	Ethernet (10 BASE-T/100 BASE-TX), RJ-45 x 1
	Parallel Remote	D-sub 9-pin (female) x 1	D-sub 9-pin (female) x 1
	Option A	Mini-DIN 8-pin (female) x 1	Mini-DIN 8-pin (female) x 1
	Option B	USB (Type A) x 1 (used for future expansion)	USB (Type A) x 1 (used for future expansion)
DC 5V Out		Circle 4-pin (female) x 1	Circle 4-pin (female) x 1
GENERAL			
Power Requirements		100 to 240 V AC, 2.0 to 0.9 A, 50/60 Hz	100 to 240 V AC, 50/60 Hz, or DC 24V to 28V
Power consumption		Approx. 180 W (at maximum load, the luminance compensation due to the aged deterioration of the LED is included.)	Approx. 130 W (AC), Approx. 120 W (DC) (at maximum load, the luminance compensation due to the aged deterioration of the LED is included.)
Operating Temperature		32 °F to 95 °F (0 °C to 35 °C) (Recommended operation temperature 68 °F to 86 °F (20 °C to 30 °C))	32 °F to 95 °F (0 °C to 35 °C) (Recommended operation temperature 68 °F to 86 °F (20 °C to 30 °C))
Operating Humidity		0 % to 90 % (no condensation)	0 % to 90 % (no condensation)
Operating Pressure		700 hPa to 1060 hPa	700 hPa to 1060 hPa
Storage and Trans. Temperature		-4 °F to +140 °F (-20 °C to +60 °C)	-4 °F to +140 °F (-20 °C to +60 °C)
Storage and Trans. Humidity		0 % to 90 %	0 % to 90 %
Storage and Trans. Pressure		700 hPa to 1060 hPa	700 hPa to 1060 hPa
Dimensions (W x H x D)		22 3/8 x 17 1/4 x 9 5/8 inches (565.5 x 436.4 x 243.1 mm)	17 1/4 x 10 1/2 x 11 inches (436 x 265.8 x 278.6 mm)
Weight		Approx. 46 lb 5 oz (21 kg)	Approx. 30 lb 14 oz (14 kg)
Supplied Accessories		AC power cord (1), AC plug holder (1), Cable holder (1), Bracket (1), Operation Manual (Japanese, English, each 1), Connection Cable for Color Temperature Probe (1), CD-ROM (1), Using the CD-ROM Manual (1)	AC power cord (1), AC plug holder (1), Rack mount bracket (Left, right, each 1), Rack mount attachment screws (6), Operation Manual (Japanese, English, each 1), Connection Cable for Color Temperature Probe (1), CD-ROM (1), Using the CD-ROM Manual (1)

BKM-16R

INPUT/OUTPUT	
LAN	10BASE-T/100BASE-TX connector: RJ-45 x 1
DC 5V/12V IN	Circle 4-pin (male) x 1
GENERAL	
Power Requirements	DC IN: 5 V, 1.1 A (supplied by the connected monitor) DC IN: 12 V, 0.5 A (supplied by the connected AC adaptor) AC adaptor: AC IN: 100 to 240 V, 50/60 Hz, DC OUT: 12 V, 3 A
Current Consumption	5 V DC, 1.1 A/12 V DC, 0.5 A
Power Consumption	Approx. 6 W
Operating Temperature	32 °F to 95 °F (0 °C to 35 °C) (Recommended operating temprature 68 °F to 86 °F (20 °C to 30 °C))
Operating Humidity	0 % to 90 % (no condensation)
Operating Pressure	700 hPa to 1060 hPa
Storage and Trans. Temperature	14 °F to 104 °F (-10 °C to + 40 °C)
Storage and Trans. Humidity	0 % to 90 %
Storage and Trans. Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	16 3/4 x 2 3/8 x 7 inches (424 x 58.8 x 174.9 mm)
Weight	Approx. 4 lb 10 oz (2.1 kg)
Supplied Accessories	AC adaptor (1), AC power cord (parts number: 1-757-562-1x1 for USA and Canada, 1-575-131-8x for Europe) (1), Rack mount brackets (2), Rack mount attachment screws (4), Function labels (2), Operation manual (1)

BKM-250TG

INPUT/OUTPUT	
Serial Digital Interface	BNC x 2, Digital component signals Sampling frequency 3G-SDI: Y/Cb/Cr: 148.5 MHz/74.25 MHz/74.25 MHz, G/B/R: 148.5 MHz/148.5 MHz/148.5 MHz HD-SDI: Y/Cb/Cr: 74.25 MHz/37.125 MHz/37.125 MHz, SD-SDI: Y/Cb/Cr: 13.5 MHz/6.75 MHz/6.75 MHz
Monitor Out	BNC x 2, Output signal amplitude: 800 mVp-p ± 10 % Output impedance: 75 Ω unbalanced
Transmission Distance	3G-SDI: 230 ft (approx. 70 m) max. (When using 5C-FB coaxial cables (Fujikura. Inc.) or equivalent.) HD-SDI: 328 ft (approx. 100 m) max. (When using 5C-FB coaxial cables (Fujikura. Inc.) or equivalent.) SD-SDI: 656 ft (approx. 200 m) max. (When using 5C-2V coaxial cables (Fujikura. Inc.) or equivalent.)
GENERAL	
Voltage	+3.3 V, +5 V (supplied from the main unit)
Power Consumption	Approx. 4 W
Operating Temperature	32 °F to 95 °F (0 °C to 35 °C) (Optimum temperature 68 °F to 86 °F (20 °C to 30 °C))
Operating Humidity	0 % to 90 % (no condensation)
Operating Pressure	700 hPa to 1060 hPa
Storage and Trans. Temperature	-4 °F to 140 °F (-20 °C to +60 °C)
Storage and Trans. Humidity	0 % to 90 %
Storage and Trans. Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)
Weight	Approx. 9.5 oz (270 g)
Supplied Accessories	Operating Instructions (1)

BKM-243HS

INPUT/OUTPUT	
Serial Digital Interface	BNC x 2, Digital Component Signals Sampling Frequency: SD-SDI: Y/R-Y/B-Y: 13.5 MHz, HD-SDI: Y/Pb/Pr: 74.25 MHz Quantization: 10 bits/sample
Monitor Out	BNC x 1, Output signal amplitude: 800 mVp-p ± 10 % Output impedance: 75 Ω unbalanced
Transmission Distance	SD-SDI: 656 ft (approx. 200 m) max. (when using 5C-2V coaxial calbes (Fujikura) or equivalent) HD-SDI: 328 ft (approx. 100 m) max. (when using 5C-FB coaxial cables (Fujikura) or equivalent)
GENERAL	
Voltage	+3.3 V, +5 V (supplied from the main unit)
Power Consumption	Approx. 2 W
Operating Temperature	32 °F to 95 °F (0 °C to 35 °C) (Recommended operation temperature 68 °F to 86 °F (20 °C to 30 °C))
Operating Humidity	0 % to 90 % (no condensation)
Operating Pressure	700 hPa to 1060 hPa
Storage and Trans. Temperature	-4 °F to 140 °F (-20 °C to 40 °C)
Storage and Trans. Humidity	0 % to 90 %
Storage and Trans. Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)
Weight	Approx. 9 oz (250 g)
Supplied Accessories	Operating Instructions (1)

BKM-227W

INPUT/OUTPUT	
Composite Input	BNC x 1, 1 Vp-p ± 3 dB sync negative
Y/C Input	4-pin mini DIN x 1 Y: 1 Vp-p ± 3 dB sync negative C: 0.286 Vp-p ± 3 dB (NTSC burst signal level), 0.3 Vp-p ± 3 dB (PAL, PAL-M burst signal level)
Monitor Out	BNC x 1, Loop-through, with 75 Ω automatic termination 4-pin mini DIN x 1, Loop-through, with 75 Ω automatic termination
GENERAL	
Voltage	+3.3 V, +5 V (supplied from the main unit)
Power Consumption	Approx. 1.8 W
Operating Temperature	32 °F to 95 °F (0 °C to 35 °C) (Recommended operation temperature 68 °F to 86 °F (20 °C to 30 °C))
Operating Humidity	0 % to 90 % (no condensation)
Operating Pressure	700 hPa to 1060 hPa
Storage and Trans. Temperature	-4 °F to 140 °F (-20 °C to 60 °C)
Storage and Trans. Humidity	0 % to 90 %
Storage and Trans. Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)
Weight	Approx. 8 oz (240 g)
Supplied Accessories	Operating Instructions (1)

BKM-244CC

INPUT/OUTPUT	
Serial Digital Interface	BNC x 2, Digital Component Signals Sampling Frequency: SD-SDI: Y/R-Y/B-Y: 13.5 MHz, HD-SDI: Y/Pb/Pr: 74.25 MHz Quantization: 10 bits/sample
Monitor Out	BNC x 1, Output signal amplitude: 800 mVp-p ± 10 % Output impedance: 75 Ω unbalanced
Transmission Distance	SD-SDI: 656 ft (approx. 200 m) max. (when using 5C-2V coaxial calbes (Fujikura) or equivalent) HD-SDI: 328 ft (approx. 100 m) max. (when using 5C-FB coaxial cables (Fujikura) or equivalent)
GENERAL	
Voltage	+3.3 V, +5 V (supplied from the main unit)
Power Consumption	Approx. 4 W
Operating Temperature	32 °F to 95 °F (0 °C to 35 °C) (Recommended operation temperature 68 °F to 86 °F (20 °C to 30 °C))
Operating Humidity	0 % to 90 % (no condensation)
Operating Pressure	700 hPa to 1060 hPa
Storage and Trans. Temperature	14 °F to 104 °F (-10 °C to 40 °C)
Storage and Trans. Humidity	0 % to 90 %
Storage and Trans. Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)
Weight	Approx. 9 oz (250 g)
Supplied Accessories	Operating Instructions (1)

BKM-229X

INPUT/OUTPUT	
BNC x 3	RGB Input 0.7 Vp-p ± 3 dB (Sync on Green, 0.3 Vp-p sync negative)
	Component Input 0.7 Vp-p ± 3 dB
External Sync Input	BNC x 1, 0.3 to 4 Vp-p ± bipolarity ternary or negative polarity binary
	4-pin mini DIN x 1, Loop-through, with 75 Ω automatic termination
GENERAL	
Voltage	+3.3 V, +5 V (supplied from the main unit)
Power Consumption	Approx. 4 W
Operating Temperature	32 °F to 95 °F (0 °C to 35 °C) (Recommended operation temperature 68 °F to 86 °F (20 °C to 30 °C))
Operating Humidity	0 % to 90 % (no condensation)
Operating Pressure	700 hPa to 1060 hPa
Storage and Trans. Temperature	-4 °F to 140 °F (-20 °C to 60 °C)
Storage and Trans. Humidity	0 % to 90 %
Storage and Trans. Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)
Weight	Approx. 9 oz (250 g)
Supplied Accessories	Operating Instructions (1)

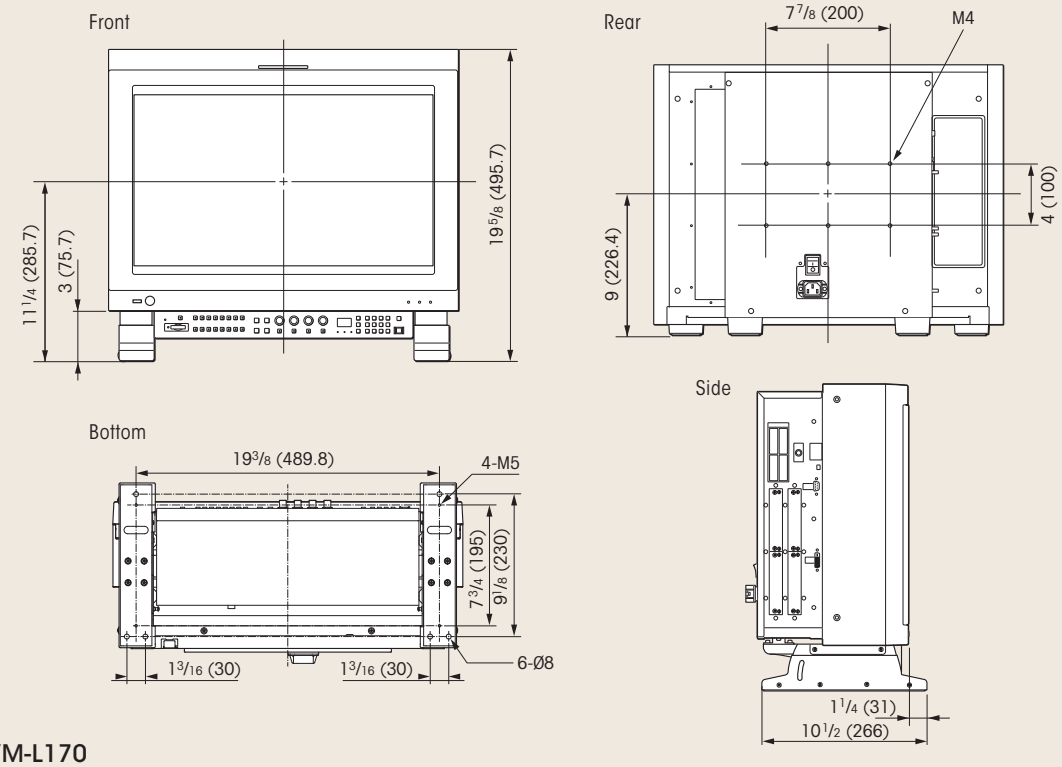
BKM-220D

INPUT/OUTPUT	
Serial Digital Interface	BNC x 2, Digital Component Signals Sampling Frequency: Y/R-Y/B-Y: 13.5 MHz Quantization: 10 bits/sample
Monitor Out	BNC x 1, Output signal amplitude: 800 mVp-p ±10 % Output impedance: 75 Ω unbalanced
Transmission Distance	656 ft (approx. 200 m) max. (when using 5C-2V coaxial calbes (Fujikura) or equivalent)
GENERAL	
Voltage	+5 V (supplied from the main unit)
Power Consumption	Approx. 1.5 W
Operating Temperature	32 °F to 95 °F (0 °C to 35 °C) (Recommended operation temperature 68 °F to 86 °F (20 °C to 30 °C))
Operating Humidity	0 % to 90 % (no condensation)
Operating Pressure	700 hPa to 1060 hPa
Storage and Trans. Temperature	-4 °F to 140 °F (-20 °C to 60 °C)
Storage and Trans. Humidity	0 % to 90 %
Storage and Trans. Pressure	700 hPa to 1060 hPa
Dimensions (W x H x D)	4 x 13/16 x 6 1/2 inches (100 x 20 x 162 mm)
Weight	Approx. 9 oz (250 g)
Supplied Accessories	Operating Instructions (1)

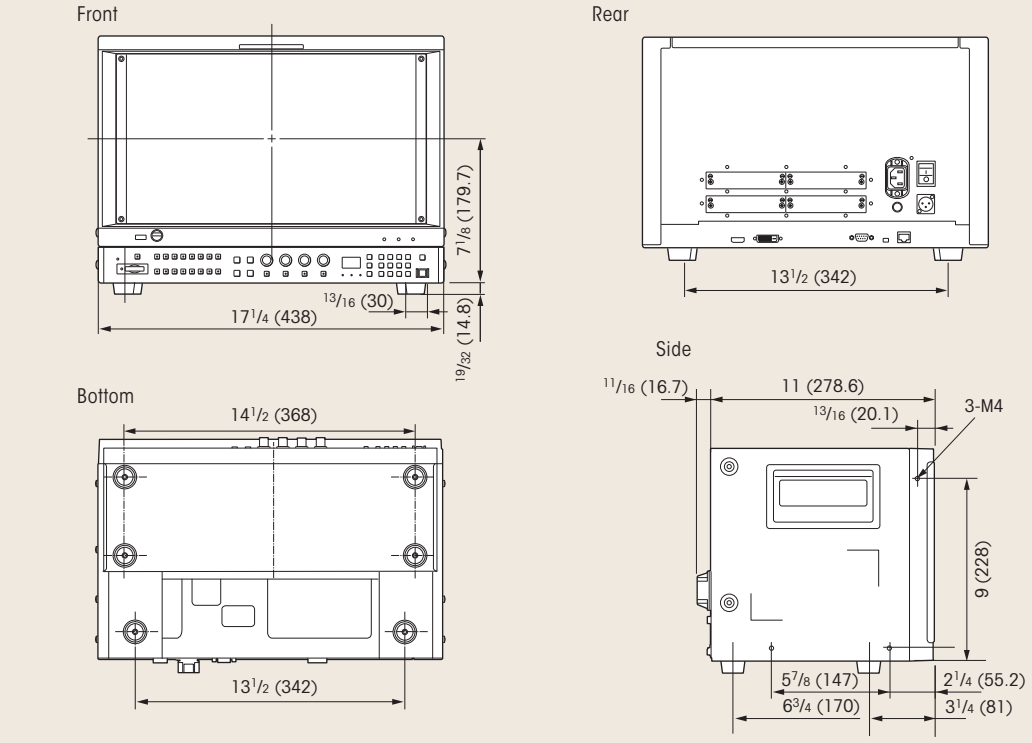
Dimensions

Unit : inch(mm)

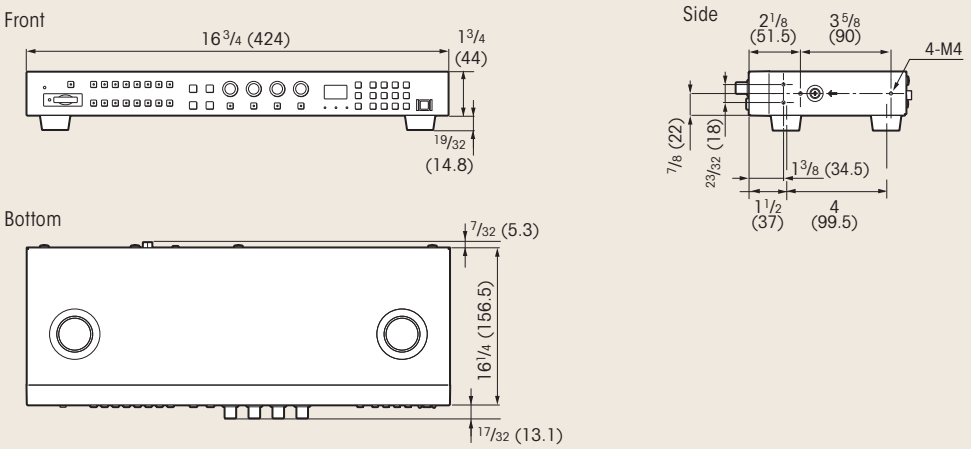
■ BVM-L231



■ BVM-L170

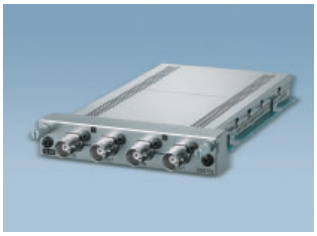


■ BKM-16R

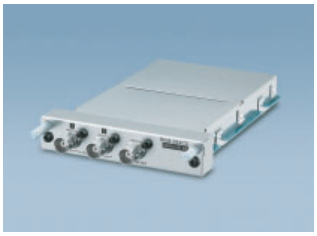


Optional Accessories

BKM-16R
Monitor Control Unit



BKM-250TG
3G/HD/SD-SDI Input Adaptor



BKM-244CC
HD/SD-SDI Closed Caption Adaptor

BKM-243HS
HD-SDI/SD-SDI Input Adaptor

BKM-220D
SD-SDI 4:2:2 Input Adaptor

BKM-229X
Analog Component Adaptor

BKM-227W
NTSC/PAL Input Adaptor

BKM-23M
Protection Panel (for BVM-L231)
*BVM-L170 equipped with a standard protection panel

BKM-37H
Controller Attachment Stand (for BVM-L231)
*Tilt Function

BKM-39H
Controller Attachment Stand (for BVM-L170)

SMF-700
Monitor Interface Cable

SONY

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www.sony.com/prodisplays

V-2442-A (MK10578V2)

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Printed in USA (8/09)